

Identity of *Amaranthus polygamus* of Hooker's flora of British India and related taxa¹

N. C. NAIR

Botanical Survey of India, Indian Botanic Garden, Sibpur, Howrah

Amaranthus polygamus of Indian floras having flowers with three tepals and three stamens has been wrongly considered conspecific with penta-tepalous and pentandrous *A. polygonoides* Linn. of Jamaica by several authors. The cause for the confusion has been discussed. *A. polygamus* of Indian floras and *A. polygamus* Linn. are distinct taxa and the latter is conspecific with *A. tricolor* Linn. *A. polygamus* of Indian floras has been named *A. roxburghianus* by Nevski. The status of *A. aschersonianus* Thell. is discussed and it is considered as *A. roxburghianus* Nevski var. *aschersonianus* (Thell.) N. C. Nair. A new combination *A. roxburghianus* Nevski var. *angustifolius* (Moq.) N. C. Nair is made. The distinguishing characters of *A. lividus* Linn. subsp. *polygonoides* (Moq.) Probst. are given.

There has been much confusion with regard to the identity of the plant which goes by the name *Amaranthus polygamus* of Hooker's FLORA OF BRITISH INDIA 4:721, 1885. This is a small prostrate or ascending herb with small oblong-lanceolate, linear-obovate or linear-obovate-obtuse leaves, clusters of axillary flowers having three acute and awned tepals (awns shorter than the leafy part of the tepal) which are longer than the bracteoles and shorter than the utricle, and three stamens. It has been referred to be *A. polygamus* Linn. Amoen. Acad. 4:294, 1759 by writers of Indian floras. Even the reference to Amoen. Acad. 4:294, 1759 is incorrect as Linnaeus published the name earlier in *Centurea Plantarum* 32, 1755. The descriptions given in these publications are exactly the same and based on the same type. *A. poly-*

gamus of Indian floras is different from *A. polygamus* Linn. *A. polygamus* Linn. and *A. tricolor* Linn. Sp. Pl. 989, 1753 are conspecific and they are treated likewise in all current taxonomic literature. *A. polygamus* of Indian floras (non Linn.) can be distinguished from *A. tricolor* Linn. by several well-defined characters (see Nair, Bull. Bot. Surv. India 8(1):88, 1967). The question arises as to what is the correct name of *A. polygamus* of Indian floras. *A. polygamus* auct. non Linn. is often, wrongly, considered to be the same as *A. polygonoides* Linn. Fl. Jam. Pugill. 2:21, 1759; Amoen. Acad. 5:382, 1760. That *A. polygamus* of Indian floras and *A. polygonoides* Linn. are two distinct species having clear cut characters will be evident from the following discussion. Let us examine what are the characters of *A. polygonoides* Linn. and how this taxon is different from *A. polygamus* of Indian floras.

¹ Accepted June 1972.

Linnaeus' type description for *A. polygonoides* is "calycibus infundibuliformibus, obtusis, singularis." This description is very brief and does not speak about the number of the tepals and stamens. Linnaeus based the name *A. polygonoides* Linn. on *Blitum polygonoides* of Sloane (Voyage 1:144, 1707). Sloane also provides a figure (loc. cit. t. 92, f. 2, 1707). His description of the flower of *Blitum polygonoides* is as follows "...without any foot-stalks. Each of them is small, pentapetalous, of a pale green colour, with a purple streak on each of the petals, and a green stamen within, after each of which follows a round compressed blackish brown shining seed." From this, it is clear that what Linnaeus named as *A. polygonoides* is a pentatepalous and pentandrous plant. Yet, several authors considered that *A. polygonoides* has tritetalous and triandrous flowers. It is surprising that Kniphofii (Herb. Viv. 1: t. 56, 1758) described the species as having "glomerulis triandris, axillaribus, foliis ovatis retusis." His figure is entirely different from that of Sloane's. Willdenov (Hist. Amar. 11, t. 61, f. 12 a & b, 1790) following Kniphofii's description (?) gave the diagnostic characters of *A. polygonoides* Linn. as "glomerulis triandris triphyllis." His figures like that of Kniphofii's do not have any similarity with Sloane's figure. It is obvious that Kniphofii and Willdenov did not refer to Sloane's work. They assumed that *A. polygonoides* has three tepals and three stamens. These mistakes have been perpetuated all along. Roxburgh (Fl. Ind. 3: 602, 1832) considered the tritetalous triandrous Indian plant as *A. polygonoides* and cited the authority of Willdenov. Wight (Ic. 2: t. 719, 1843) also called it *A. polygonoides*. Ulini & Bray (Bot. Gaz. 19:267-272, 1894) treated *A. polygonoides* under plants having two or three stamens. Trimen (Handb. Fl. Ceyl. 3: 397-398, 1895) combined *A. polygamus* auct.

(non Linn.) with *A. polygonoides* Linn. Aellen (in Fl. Eur. 1:110 & 432, 1964) united *A. lividus* Linn. and *A. blitum* Linn. with *A. polygonoides* Linn. I also wrongly inferred that the correct name of *A. polygamus* of Indian floras as *A. polygonoides* Linn. This is a very clear example which stresses the need for consulting original descriptions and figures in taxonomic researches.

A. polygonoides Linn. is a native of Jamaica and it has recently been reported from India by Naik [J. Bombay nat. Hist. Soc. 64(1):134, 1967; Indian Forest. 95(6); 416, 1969]. I have collected this plant from Kerala in May 1969 and it is very distinct from that of *A. polygamus* auct. (non Linn.).

A. polygamus of Indian floras has also been confused with another taxon by authors of European floras. Thellung [in Aschers. et Graeb. Syn. Mitteleur. Fl. 5(1):308, 1914] considered *A. polygamus* auct. (non Linn.) as a subspecies of *A. angustifolius* Lamk. Ency. 1:115, 1783. *A. angustifolius* Lamk. is an illegitimate name of *A. graecizans* Linn. Sp. Pl. 990, 1753 which is a native of Mediterranean region, West Asia and tropical Africa. This taxon is similar to *A. polygamus* of Indian floras but the latter has narrow lanceolate and acute tepals with drawn out apical point (apical point 0.26-0.76 mm) and bracteoles of similar form. Thus *A. graecizans* Linn. and *A. polygamus* of Indian floras can be regarded as two distinct species. As all the earlier names applied to this plant are illegitimate it has been named by Nevski as *A. roxburghianus*. The nomenclature of the Indian plant is as follows:

Amaranthus roxburghianus Nevski in Act. Inst. Bot. Acad. Sc. USSR, Ser. 1, Fasc. 4, 311, 1937 in Obs. (*roxburghiano*). *A. polygonoides* Roxb. Fl. Ind. 3:602, 1832 (non Linn.); Wight, Ic. Ind. Or. 2(4): t. 719, 1843 (non

t. 512); Trimen, Handb. Fl. Ceylon 3:397, 1895; Nair in Bull. Bot. Surv. India 8(1): 1967. *A. blitum* B. *polygonoides* Moq. in DC. Prodr. 13(2): 263, 1849. *Euxolus polygonoides* Miq. Fl. Ind. Batav. 1:1034, 1855; Thw. Enum. Pl. Zey. 218, 1864. *Amblogyna polygonoides* Dalz. et Gibs. Bomb. Fl. 218, 1861. *Albersia polygama* Boiss. Fl. Orient. 4:991, 1875. *Amaranthus polygamus* Hook. f. Fl. Brit. India 4:721, 1885 (non Linn.); Prain, Beng. Pl. 2:871; 1903; Cooke, Fl. Pres. Bomb. 2:491, 1906; Duthie, Fl. Upp. Gang. Pl. 3:14, 1915; Gamble, Fl. Pres. Madras 2:1171, 1925. *A. angustifolius* subsp. *polygonoides* (Moq.) Thell. var. *latifolius* Aschers. et Graebn. Syn. Mitteleur. Fl. 5 (1):308,1919.

Type

Nevski refers to Wight's Icones Indiae Orientalis 2, par. IV, tab 719 and herb. no. 6909. There is a specimen collected from South India by Wight and bearing the number 6909 in the herbarium of Komarov Botanical Institute, Leningrad. The label in Wight's handwriting reads as *Amaranthus polygamus* L. and there is a question mark after the name. On this specimen another label in Nevski's handwriting reads *Amaranthus polygonoides* Roxb. non L. and below this in bracket is written *A. roxburghianus* N. This becomes the type of the taxon.

There is a rigid erect or ascending plant with smaller and linear or linear oblong rigid leaves which is treated as a variety of *A. polygamus* by Hooker f. Fl. Brit. India 4:721, 1885. A new combination becomes necessary.

Amaranthus roxburghianus Nevski var. *angustifolius* (Moq.) N.C. Nair comb. novo. *A. blitum* Linn. var. *angustifolia* Moq. in DC. Prodr. 13(2):263, 1849. *A. polygamus* var. *angustifolia* Hook. f. Fl. Brit. India 4:721,

1885. *A. angustifolius* Lamk. subsp. *polygonoides* Thell. var. *angustissimus* Thell. in Aschers. et Graeb. Syn. Mitteleur. Fl. 5(1): 309, 1919. *A. polygonoides* var. *angustifolia* (Hook. f.) N.C. Nair in Bull. (Hook. f.) N. C. Nair in Bull. Bot. Surv. India 8(1): 88, 1967.

Wight (Ic. 2:8, t. 512, 1843) figures another plant under the name *A. polygonoides*. Although called by that name, Wight (loc. cit., 6, 1843) expressed the view that it is not *A. polygonoides* of Linnaeus and Roxburgh but an intermediate between *A. polygonoides* and *A. tristis*. Hook. f. (loc. cit.) treated it under *A. polygamus* and considered that Wight's Ic. 2:8, t. 719 refers to the same plant. This plant, also, like *A. roxburghianus* Nevski, has three tepals and a corresponding number of stamens but is different from the latter in leaf and capsule. It has been treated by Thellung as a distinct species (see below) and later he reduced (see below) it to a sub-species of *A. angustifolius* Lamk. Nevski (loc. cit., 311, 1937) upheld its specific rank. This taxon is very closely related to *A. roxburghianus* Nevski and intermediate forms are common. On these grounds it appears best to treat it only as a variety of *A. roxburghianus* Nevski.

Amaranthus roxburghianus Nevski var. *aschersonianus* (Thell.) N. C. Nair stat. novo. *A. aschersonianus* Thell. in Aschers. et Graebn. Syn. Mitteleur. Fl. 5:309, 1914; Nevski loc. cit. 311, 1937. *Euxolus polygamus* Moq. in DC. Prodr. 8(2): 272, 1849. *A. polygonoides* Wight, Ic. 2, t. 512, 1843 (non Linn., non Willd., non Roxb. & non Wight, t. 719). *A. angustifolius* Lam. subsp. *aschersonianus* Thell. in Aschers. et Graebn. Syn. Mitteleur. 5:309, 1919.

Closely resembling the above taxa is another plant which has also gone under the name

of *Amaranthus polygamus*. This is *Amaranthus lividus* Linn. subsp. *polygonoides* (Moq.) Probst. Wolladventivfl. Mitteleur. 74, 1949; Brenan, *Watsonia* 4(6):275, 1961. *Euxolus viridis* (Linn.) Moq. var. *polygonoides* Moq. in DC. Prodr. 13(2): 274, 1859. *A. ascendens* Lois. var. *polygonoides* Thell. ex EHL. Krause in Mittheil. Philom. Ges. Els.-Lothr. 4(3), 1910 S. 372, 1911 fide Thell. in Aschers. et Graebn. Syn. Mitteleur. 5:320, 1914. *A. lividus* Linn. var. *polygonoides* (Moq.) Thell. in Aschers. et Graebn. Syn. Mitteleur. 5:320, 1919 (as var. *Zollinger* Thell.). *A. ascendans* Lois. subsp. *polygonoides* (Moq.) Priszter, Ann. Sect. Horti et Viticult. Univ. Sci. Agric. Budap. 221, 1953.

This plant also is common in India and is found often mixed up with collections of *A. roxburghianus*. It is a common weed of culti-

vated places and can be distinguished by the following characters:-

Small monoecious herbs with glabrous stems; leaves emarginate or subtruncate; longer bracteoles of female flowers about half as long as the flowers; tepals 3, obtuse; fruit not circumscissile, about 1½ times longer than the tepals, and seed almost filling the cavity (see Bennet *J. Bombay nat. Hist. Soc.* 68:491, 1971).

ACKNOWLEDGEMENTS

I am thankful to the authorities of Komarov Botanical Institute Leningrad, U.S.S.R., where this work was carried out under the Indo-Soviet Cultural and Scientific Exchange Programme, for facilities. I am also thankful to Dr. K. Subramanyam, former Director, Botanical Survey of India for his interest.